

A Water Review Quarterly

RECREATION

Vol. 63, Nos. 3 and 4

era





Vol. 63 Nos. 3 and 4

**United States**  
**Department of the Interior**  
 Cecil D. Andrus, Secretary

**Bureau of Reclamation**  
 R. Keith Higginson, Commissioner

**Editor**

Cassandra Larkins

**Assistant Editor**

Carol White

Letters to the editor should be addressed to: Editor: Reclamation Era, Code 143, Bureau of Reclamation, 18th and C Sts., NW., Washington, D.C. 20240.

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Price: \$1.05 for single copy, \$4.00 for annual subscription (\$1.00 additional for foreign mailing).

**Contents**

California Drought: Effects on Fish and Wildlife <i>by Steve Rademacher</i>	1
Follow the Liter! <i>by Jim Kluge</i>	4
Yesterday and Today	8
The Day the Water Came <i>by Hu Blonk</i>	8
Columbia Basin Project <i>by Hu Blonk</i>	12
Number One Ditchrider <i>by Sue DeShazo</i>	16
Water Quiz	18
World Championship Innertube Race <i>by Julian Rhinehart</i>	20
News Notes	25
Employees in the News	
Reclamation Construction in the News	

Issued quarterly by the Bureau of Reclamation, United States Department of the Interior, Washington, D.C. 20240. Use of funds for printing this publication approved by the Director, Office of Management and Budget, February 3, 1975.

# CALIFORNIA DROUGHT

## effects on fish and wildlife

by Steve Rademacher

The 1976-77 California drought has caused major environmental changes which may have short- and long-term impacts on some of the Golden State's fish and wildlife resources. The most notable changes include: lower water levels, higher water temperatures, fluctuating reservoirs, and loss of vegetation. The extent of these changes and the attendant adverse impacts on fauna vary geographically commensurate with water distribution. Effects were most severe in the lower and mid-elevations of the Central Valley area, with fewer repercussions reported in the southern California environs. Some impacts were apparent while others were subtle and may require years and perhaps several reproductive cycles to evaluate.

One of the most publicized trouble areas was the Sacramento River system. It was here that low riverflows, coupled with

high water temperatures, threatened the survival of one of the most valuable sport and commercial fish in northern California—the king salmon. These fish migrate upriver from the Pacific Ocean to spawn in the cool, fresh, fast flowing tributaries and upper mainstem of the river.

Traditionally, the largest numbers of fish appeared in the upper stretches of the river in the fall and reproduced best when water temperatures remained below 57°F. But in the autumn of 1976 and in 1977 water temperatures exceeded 60°F in many locations. Some biologists estimate that for each 1°F

exceeding 57°F, egg mortalities increase by an increment of 15-25 percent. If this estimate is valid, then egg survival for the 1977 autumn run appears grim. Attempting to offset the expected damage, the California Department of Fish and Game (DFG) and the U.S. Fish and Wildlife Service blocked upstream migrants at Red Bluff Diversion Dam. The purpose was twofold: (1) to trap and transport "ripe" salmon to cooler, adjacent tributaries and (2) to force the remaining fish to spawn in the cooler water below the dam. The

---

Steve Rademacher is an environmental planner, Bureau of Reclamation, Mid-Pacific Region, Sacramento, Calif.

---





**A magnificent bull elk stands in lush grass.**



**A spawned-out chinook salmon from the American River, Calif.**

value of these corrective measures is uncertain and probably will not be known until the adult fish return in 4 years.

The effectiveness of the corrective measures taken in 1976 is more certain than those taken in 1977. Adequate spawning temperatures were maintained in the upper river when the Bureau of Reclamation and the California Department of Water Resources altered operations in upstream storage reservoirs to produce cool, stabilized flows.

As a result, most fish experienced fairly good spawning conditions. Unfortunately, a similar remedy could not be imposed in 1977 because depleted reservoirs lacked the necessary cool water.

In addition to the Sacramento River, almost all streams and reservoirs draining into the Central Valley were in bad shape in 1976 and 1977. Numerous small streams which normally support populations of rainbow trout, smallmouth bass, and nongame fish evaporated, destroying aquatic life. Ironically, many of the streams still supporting fish received flows from upstream reservoirs which have been

denounced in the past by fish and wildlife interests. Without these flows, most of the streams would have been bone dry. The lack of water at mid-elevations was so acute that the DFG drastically curtailed its catchable trout program in these areas. Consequently, fishermen sought out the higher elevation streams, lakes, and reservoirs which had adequate water supplies. This led to abnormal angler concentrations and subsequent overfishing in many areas.

Another important change—fluctuating reservoir levels—disrupted the reproductive cycle of resident warm water fish. Reservoir releases during the spring and summer (1976-77) exposed eggs of largemouth bass, crappie, and bluegill which normally lay their eggs inshore, just below water level. At some reservoirs, DFG biologists believe major reductions in largemouth bass reproduction resulted.

Generally, terrestrial fauna fared much better than their aquatic counterparts. Due to less severe winter conditions on critical ranges and adequate forage at higher elevations, deer suffered less stress than normal. On the other hand, quail, pheasants,

and other ground-nesting upland game were not so fortunate.

These animals depend on the spring rains that produce forbs, grasses, and seeds for food and nesting. They also need water, cover, and food within a certain proximity to survive. The rains that help ensure these conditions did not occur in 1976 or 1977. Thus, populations were reduced or stressed considerably. To help offset these circumstances, DFG constructed water dispensers (guzzlers) in water-short areas and instigated habitat improvement programs such as controlled burns and irrigation to enhance water and food opportunities.

In the foothills, the California Division of Forestry reported a deterioration of the quantity and quality of vegetation. Estimates of vegetation loss ranged from 10-20 percent depending on species and location. This loss of vegetation and the lowered water content in the remaining foliage rendered large quantities of forage unpalatable or unnutritious for many animals. The result was a general deterioration of traditional food sources



**Extremely low water storage in Jenkinson Lake on Sly Park Creek a few miles east of Placerville, Calif.**

and an increased depredation of irrigated farmlands and rural gardens.

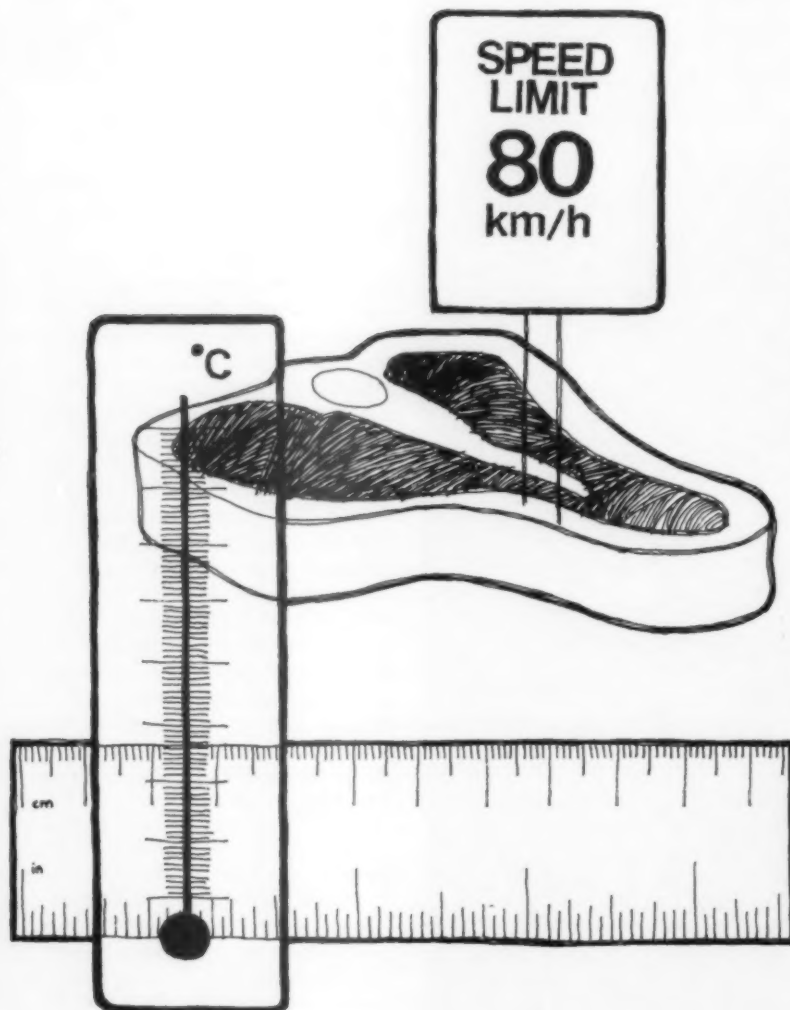
All is not lost, though. The rains returned. Precipitation was above normal, and the snow-packs in the Sierra Nevadas were the best in years. In addition, nature has a way of bouncing back and mending its wounds after natural catastrophes. The endemic populations of plants and animals have adapted to weather extremes and have produced intricate physiological and behavioral methods of coping.

For the sake of nature lovers, sportsmen, and even staunch urbanites who get goose bumps when they see a 35-pound chinook salmon, let's hope nature, with a little prodding by homo sapiens, mends its wounds well. **ES**

**Because of drought, East Park Dam on the Orland Project stands literally hundreds of feet away from reservoir water.**

# FOLLOW THE LITER!

by Jim Kluge



What will we call a 2-by-4?  
Will we know whether it is  
warm enough for a picnic if the  
weather forecast calls for week-  
end temperatures in the high  
20's?

Will race car fans get used to  
an Indy 800?

What is a reasonable price for  
2 kilograms of steak?

It may be a while yet before  
we have to worry about the  
answers to these questions, but  
in several respects we are  
already feeling the effects of one  
of the biggest challenges and  
changes in everyday life that has  
ever faced Americans. From  
soda pop, to car engines, to  
signs in the national parks—  
many everyday things around us  
are beginning to testify to the  
progress this country is making  
in going metric.

While it has been more than  
a century since the Congress

---

Jim Kluge is a writer-editor in  
the Bureau of Reclamation's  
Engineering and Research Cen-  
ter, Denver, Colo.

---

authorized the metric system as a legal, but optional, form of measurement in the United States, it was not until December 1975 that it passed the Metric Conversion Act declaring that the International System of Units (SI or, informally, metric) would be this country's basic form of measurement. The act called for a U.S. Metric Board "to coordinate the voluntary conversion to the metric system."

In June 1975, the Department of the Interior directed all its bureaus and offices to adopt a "5-year rule" in converting to metric. The 5-year rule presumes that the country will be predominantly metric by 1980, but directs Interior agencies to keep informed on metrication in private industry as a guide.

Today we are more than halfway through this 5-year period, and Reclamation has marked some notable metric milestones. Reclamation recently issued the specifications for Choke Canyon Dam in Texas, a zoned earthfill embankment 5,640 meters long

and 35 meters above the bed of the Frio River, designed predominantly in metric.

Metric specifications for two other projects are on the drawing boards: Sugar Pine Dam in California's Central Valley Project, also an earthfill structure, is 177 meters long and 54.5 meters high; and the 230-kilovolt Poncha Substation, which is a part of the Fryingpan-Arkansas Project in Colorado.

Among the few exceptions to the metric designs will be certain manufactured items, such

---

***From soda pop, to car engines, to signs—this country is . . . going metric.***

---

as pipe, which will continue to show the customary units. For example, you may have a control structure housing a 27-inch pipe with a 685-millimeter-square, high-pressure gate.

The Bureau's Yuma Desalting Plant—to be the largest of its kind in the world—will be designed and constructed in

metric. The operation will use metric instrumentation and process control.

Other tangible examples of metrication in Reclamation range from contracts for metric photogrammetry to drawings for a completely metric-dimensioned, air-valve cover. One of Reclamation's regional offices is even inviting local irrigation district personnel to its employee training sessions so that they too may become familiar with SI—the new, modernized, metric system.

Publications have always been the prime medium for disseminating Reclamation's research findings, and many of them are read worldwide. All research publications and at least half of all other publications coming from Reclamation's Engineering and Research Center in Denver are being published in soft metric (in which both the SI units and the U.S. customary units are shown). A good 25 percent of the publications are in hard metric (the data were actually gathered in metric units and no conversions are shown).



**The proposed Yuma Desalting Plant will be the largest of its kind in the world and will include metric instrumentation and process control.**

But let's back up a minute. Before picking up the metric ball and starting to run with it, Reclamation had to see where it was going.

Initially, metric coordinators were appointed for each of the Bureau's seven regions and for each division at the Engineering and Research Center, all under the general leadership of a Reclamation metric coordinator in the Washington office. Until metric conversion is complete, their job is to survey the road that metrication in Reclamation will take, establish the grades, set the speed, and smooth out the chuckholes.

By August 1976, when Reclamation mustered its metric experts at a meeting in Denver, a metric conversion schedule had been established.

One of the goals they set was that all construction specifications would be designed and

published in hard metric by 1980; but they tempered the push for 1980 metric design by saying that our metric conversion rate should keep pace with private industry. This was in keeping with the Secretary of the Interior's caution that Government not force industry into any premature metrication in any area. (Incidentally, private industry is generally leading the switch to metric in the United States, for purely economic reasons.)

Training, or at least orientation, in basic metric for Reclamation's more than 8,000

quantities; secretaries and editors will need to learn the exacting standards for spelling, pronouncing, and symbolizing SI units.

At least one of Reclamation's offices has had a head start on the switch to metric. Reclamation's "Project Skywater" personnel in Denver have long been using some units of the SI metric system in their work in weather modification. Elevations and storm dimensions are measured in meters and kilometers; wind speeds in kilometers per hour. Temperatures go by the Celsius or Kelvin scale. The silver iodide used in cloud seeding is metered out in grams. In measuring atmospheric pressure, the millibar is still being used, although the SI unit for pressure is the pascal. Since 1973, Project Skywater has required its contractor reports and most other publications to show metric units.

When we finally gear ourselves to *thinking* metric instead of converting to metric, it should be easier. A few countries which have gone before us in the switch to metric, such as England and Australia, have found

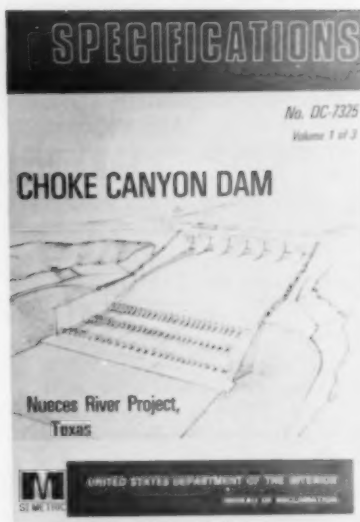
### ***Training in metric for Reclamation's employees is a priority.***

employees is an immediate and continuing priority.

Draftsmen, engineers, scientists, and technicians will need to learn to calculate test results, produce designs, and dimension drawings in metric; accounting personnel will need to learn to estimate and invoice metric



Architect's rendering of Poncha Substation, being designed primarily in metric.



Specifications for Choke Canyon Dam, a metric-dimensioned project.

that the least painful and, in some cases, the safest way to conversion is through a kind of "cold turkey" approach.

There are a host of familiar, everyday things around us that can help us get a feel for the magnitude of SI units without converting. And what could be more familiar and everyday than water, especially to those of us in Reclamation.


For example, a liter (a little more than a quart) of water has a mass of 1 kilogram. A liter is the volume of water contained in a cube measuring 10 centimeters on a side. This same liter spread over 1 square meter (about the area of a Volkswagen door) would exert a pressure of 10 pascals and be 1 millimeter deep (about the thickness of a dime). One cubic meter of water has a mass of 1 metric ton, which is 1000 kilograms. Water freezes at 0°C and boils at 100°C.

Neat and simple. Few could deny that the metric system is just that. But switching over to it is not neat and simple. We have been using feet and inches, pounds and ounces, and good ol' Fahrenheit's scale for more than 200 years. The customary

measuring system is deeply entrenched, and the "new" one is naturally fraught with unknowns for the average American. Even though simpler than our customary system, the initial cost (to be paid back later in benefits) of conversion and re-education can cause heated reaction to the system.

"Centimeters, my foot!" say the cons. "Follow the liter!" say the pros.

At this stage, however, it seems the question is not whether to go metric, but how to do it smoothly and economically. The metric tide that has swept 90 percent of the world's population has definitely washed up on America's shores.

President Carter formally endorsed voluntary metric conversion in the United States by stating his support of the Metric Act: "Adoption of the metric system of measurement in the United States will bring us in step with other nations of the world," he said, "and enhance our ability to trade in foreign markets." 

---

## Yesterday and Today in the ERA

---



### Yesterday The Day the Water Came

by Hu Blonk

[Editor's note: Twenty-five years ago the Columbia Basin received its first water from the Grand Coulee Dam. This account is reprinted from *The Wenatchee Daily World*, May 29, 1952.]

Moses Lake—Wow! What a day! A huge crowd, estimated at 50,000, was present in the Columbia Basin yesterday to witness the symbolic, long-awaited delivery of water to the first of a million acres of semiarid land.

A hundred to 125 cameras—more than have ever been seen at one time at a major news event by oldtime hands among the news media—focused on a gold-plated shovel as it diverted the new irrigation supply provided by pumps at Grand Coulee Dam to the already famous "Farm in a Day".

The familiar irrigation tool was wielded by the Commissioner of Reclamation, a grinning Mike Straus, a few minutes after he and Donald Dunn, the veteran who had been given the \$75,000 farm, had jointly opened a gate at a turn-out.

The history-making event occurred on the 8th day of an 11-day Columbia Basin Water Festival involving celebrations

all over the place from Soap Lake in one direction to Pasco in the other.

Yesterday's spectacle, never before attained on such major proportions anywhere, featured 80 acres of sagebrush land being turned, within 24 hours, into an irrigated farm, with crops planted, house and farm buildings up, and even the landscaping accomplished.

Aerial torpedos exploded at 11:30 last night to mark the completion of work by 300 volunteers and 70 machines.

The celebration, making a dream of 3½ decades come true (65,000 acres are to be served this year) aroused individual community celebrations earlier in Pasco, Kennewick, Richland, Quincy, Ephrata, and Soap Lake. It is to be followed by more celebrating in the latter two places, plus Othello and Coulee City.

TRI CITIES—It all started at Pasco May 22. The main event was an "Aquarama", a musical and dance fantasy dealing with the history of the world's greatest rivers.

---

Hu Blonk is the former Managing Editor of *The Wenatchee Daily World* (Washington) and former Chief of Publications for the Bureau of Reclamation, Washington, D.C.

---



The crowd cheered as the first water flowed on the Pasco Unit, Columbia Basin Project, May 15, 1948.

Presidential candidate Harold Stassen spoke at Kennewick and a parade of 121 marching units was seen at Pasco.

A couple of days prior to the start of the many days of festivities, Sally Johnson, 17-year-old Soap Lake girl, was crowned "Water Festival Queen" by Lt. Governor Vic Meyers at Richland.

Prior to the coronation Queen Sally, who had been chosen at a Spokane affair, had appeared on four television shows in Hollywood and had been offered a screen test, which she turned down saying she was "no actress."

QUINCY—On Monday, May 26, the spotlight shifted to Quincy, the town which had been dreaming of water since the turn of the century, even considering waterlifting windmills at one time. Under the theme "The Old and The New", the town staged the biggest parade in its history. It drew 2,500 people, who also saw the annual jackrabbit races, a plowing and tractor contest.

Those who wore derbies turned down their brims to get a little more protection from the

Steamboat Rock before and after filling Banks Lake of the Columbia Basin Project.



blazing sun that has prevailed in the Basin since the big show was launched.

**EPHRATA-SOAP LAKE**—On Tuesday, May 27, the celebration shifted to the Ephrata-Soap Lake area. Besides a golf tournament, with \$2,000 in prizes, there were two other major attractions.

On a three-level stage, 300 feet wide and 115 deep, built on the shores of the mineral lake, the "Grand Coulee Cavalcade" pageant had its premiere. It is to run four nights. Some 700 people performed under the stars. During the productions fireworks depicted the burning of Rome and the pageant ended with more fireworks depicting the Grand Coulee Dam spillway.

At Ephrata on the day of the premiere, "The Little World's Fair" opened. The fair consisted of exhibits and activities in the hangers at the Ephrata Air Base and can be seen three more days. The opening day of the fair was called "All Nations Day" in honor of visiting representatives of 30 foreign nations traveling through the Northwest.

**MOSES LAKE**—Yesterday, when the celebration shifted to Moses Lake, a horde of news

media people, representing TV, radio, and newsprint organizations, were on hand to cover the dawn-to-dusk "Farm In a Day". Hubert H. Walter, president of Columbia Basin Celebration, Inc., said several top-ranking newsmen told him they'd never before seen so many cameras in action at one place simultaneously.

The tremendous one-day surge of publicity for the project has been preceded by major news media coverage, and more is to follow. Edward R. Murrow is to feature the spectacular event on the popular "See It Now". The festival queen has appeared on "Queen For a Day", and "People are Funny" had a four-week celebration build-up before sending a contestant, a future settler in the basin, to Washington State on a "treasure hunt" that earned him a \$1,000 prize.

The high ranking "Breakfast Club" broadcast will feature the farm spectacle and other events, as will "Voice of America" and the Associated and United Press, plus such magazines as *Look*, *Life*, *Popular Mechanics*, *National Geographic*, *Sunset*, *Business Week*, *Redbook*, *Colliers* and *Country Gentlemen*, to mention just a few.

Farm winner Dunn, chosen after a publicity-getting nationwide search, has appeared before the House Interior and Insular Affairs Committee in Washington, D.C., and while there, was given a gold-plated irrigation shovel by the National Reclamation Association. The family has also received gifts from governors of 17 Western Reclamation States, including a heifer from Texas.

Moses Lake Chief of Police Al Bjork said today that a 24-hour traffic count showed 11,000 cars passed over the route to the "Farm In a Day" overlook. He estimated the crowd in the area yesterday for the festival event at 50,000.

**OTHELLO**—The next day there will be a land lottery in Othello, at which 42 applicants for the purchase of government land are to draw for the order in which they may choose their units. They were the winners in earlier drawings in which more than 7,000 World War II veterans applied for purchase rights to irrigation units.

**COULEE CITY**—On Saturday, May 31, Coulee City is to stage the first of a 2-day "Frontier Days" celebration, which will include a rodeo and other pioneer-type festivities.



Princesses, representing each of the 48 States, pour water into the Main Canal during the ceremony celebrating delivery of first irrigation water to the Columbia Basin Project.



Local beauty draws a lucky applicant's name for the federally owned settlement units on the Columbia Basin Project.

The last day of the 11-day celebration, June 1, is to feature, at Soap Lake, the largest interdenominational church service ever held in the State.

**GRAND COULEE DAM**—The hullabaloo over water delivery was actually begun a year earlier, when the pumps were turned on at Grand Coulee Dam. As the water surged up out of Lake Roosevelt into the feeder canal on June 14, 1951, some 30 attractive Apple Blossom Festival princesses emptied gallon jugs of water into the huge inflow. These had been filled by governors of States all over the Nation, in a publicity stunt intended to symbolize the benefits the whole Nation gets from Western Reclamation projects through the manufacture and transportation of goods and equipment used by the new farmers and townspeople nearby, such as automobiles, dresses, and groceries.

On May 8 of this year Grand Coulee got the spotlight. A Grand Coulee Dam commemorative stamp had been produced by the Post Office Department at the urging of Basin publicity people and it held a "first day" sale at the damsite.

Senator Warren G. Magnuson and Governor Arthur B. Langlie were principal speakers, being joined by an assistant postmaster general. Eastern stamp dealers, who had purchased 200,000 of the postage stamps, had a crew of people licking the stamps at the site for the first day covers.

Actually yesterday's much-heralded irrigation supply from Grand Coulee had served a number of farms earlier, the Bureau of Reclamation feeling it could not keep water from farmers with crops planted who were asking for it. Four years previously the first of 5,000 acres near Pasco got water from the Columbia River through pumps there.

Missing from the scenes of activity were the men mainly responsible for bringing it all about: Rufus Woods, the late publisher of *The Wenatchee Daily World*, who in 1918 wrote the first story about the idea for a dam at the mouth of the Grand Coulee and promoted it extensively in his paper until his death in 1950, and James O'Sullivan, a lawyer by way of Michigan, who devoted nearly three decades of his life to the campaign and who died in 1949.



---

Today  
**Columbia Basin  
Project**

by Hu Blonk

\* Reprinted from *The Wenatchee Daily World*, May 2, 1977.

This is the story of Bob and Les and Irmajean and a lot of other guys and gals. Bob Garcia is employed on a farm in the Quincy area and he's one of six to seven thousand people who, either as owners or farm hands, work on the irrigated places created the last 25 years with water brought from Grand Coulee to the Columbia Basin Project.

Les Dewey is the personnel manager for Lamb-Weston, a plant that turns potatoes into frozen french fries and other products, and he holds one of the 1,500 to 2,000 jobs created in the processing of Basin crops or in handling them for the fresh market.

Irmajean Moe runs a real estate office in Ephrata. She gets mentioned here because she's one of 9,000 to 10,000 people having found a business or employment in rendering whole-sale or retail services for those in the empire of irrigation, such as restaurants, gasoline stations, and the offices of doctors and lawyers.

Add these totals and you get 16,500 to 19,000 jobs or the equivalent in seasonal work.

Mix water and land in Columbia Basin proportions and add hard labor and you get a lot more impressive statistics on the occasion of the 25th anniversary of initial water delivery. Like these:

The reclamation of a vast area of semiarid land has produced a whopping \$2 billion in crops. In 1975 the per-acre crop return was \$470.

Focusing down on a specific crop, the basin produced about 16 million tons of sugar. That's the equivalent of 3.6 to 4.8 billion pounds of sugar; quite a pile! Major crops, though, are alfalfa and wheat.

Water on the land has nearly tripled the population of project towns, from 25,000 before irrigation, to about 70,000 now. The figures become more graphic when you look at specific towns. Moses Lake, which had 4,244 people in 1952,



Grand Coulee Dam complex.



Potatoes receive a final inspection before going to the cookers at a processing plant in Othello.

---

Sunflowers are raised for sunflower oil  
along Lee Road,  
northeast of Othello, Wash.



now has 10,310. Quincy's figure rose from 1,332 to 3,237 over the same period and Othello, which had but 699 people 25 years ago, now has 4,172. And new communities have come into existence, such as Royal City and George.

The 5,900 farms created have made possible over a hundred facilities handling crops for the produce market and 13 huge processing plants, which break down the farm product, such as U & I Sugar, with an annual payroll of \$7 million, Chef Reddy potatoes, \$4½ to \$5 million, and Lamb-Weston, with 800 employees.

The project has brought about small farms and big farms. About a third of them are from 100 to 200 acres in size, with less than one percent over a thousand acres—23 in number to be specific. The average is about 90 acres.

Those who like to brag about what's happened in what was once the delta of a prehistoric Columbia also like to point out the federal investment in the dams and irrigation works has been a wise and prudent one.

Uncle Sam has \$375 million of his money in such works as pumping plants, reservoirs and canals, out of more than a billion in the entire development, which includes mighty Grand Coulee Dam.

All of this vast sum of money, except a mere \$48 million allocated to flood control and other benefits, is to be paid back to the Federal Treasury from the sale of Coulee power and repayments by water users. Already a third has been returned. Farmers annually pay \$2.63 per acre toward repayment of construction cost, plus \$10 to \$11 for operation and maintenance.

The glowing terms used herein cover only the benefits that have come from irrigating just half the million-acre potential. The remaining half will get water through a second tunnel and siphon near Coulee City, which is now under construction.

The so-called "East High" area of 463,000 acres now has a population density of only 2.5 persons per square mile. With irrigation this figure will grow to 30. It will directly support some 22,435 people, plus 45,133 people in the municipalities which are affected by the growth

in the area, such as Wenatchee, Moses Lake, Spokane and the Tri-Cities.

As to jobs, this area, with little potential for economic growth without water, now contributes but 1,500 within the State because of its production, mostly wheat. With irrigation the East High area could be expected to contribute directly or indirectly some 28,105 jobs.

The reputable Battelle Northwest Laboratories makes these predictions in a research study of the new tunnel and siphon's economic effect, which was undertaken for the Columbia Basin Development League, long-time project booster organization.



**The West Canal flows  
along the edge of the Royal Slope,  
Columbia Basin Project.**



**An inviting park along the  
shore of Billy Clapp Lake where  
Summer Falls drops over the cliff.**



**A swather at work  
in a field of alfalfa  
along the edge  
of the Frenchman Hills, Wash.**

---

# number one ditchrider

by Sue DeShazo

Aguador Numero Uno—the number one water man or ditchrider—on the Rio Grande Project, Southwest Region, Esequiel (Mike) Macias has been on the job since 1921, longer than anyone currently employed by the Bureau of Reclamation. He retired in 1973 at age 70 with 51 years, 10 months, and 28 days service—and was

---

**16 He retired in 1973 at age 70 with 51 years, 10 months, and 28 days service**

---

immediately rehired as a re-employed annuitant.

You wonder why he was reemployed? Because Esequiel's (Eh-saeh-kee-el) experience couldn't be replaced on such short notice, and because he is sunny, sprightly, and enthusiastic.

Mike began working for Reclamation as a laborer at \$1.08 per day in 1921 and, over the years, has advanced through the positions of patrolman, canal patrolman, and gatetender, to his present position of irrigation

system operator (ditchrider). He maintains close contact with the water users in the Ysleta Irrigation Branch during the 7-month irrigation season to learn directly about problems, thus bringing about understanding and harmonious relations.

Pondering the changes that have occurred, Mike says the work was harder years ago when most things had to be done by hand. He now uses project vehicles to ride the ditches, but he recalls that he used his own "Model T" when he first became a ditchrider.

Mike was born in October 1903 in Smeltertown, Tex., but grew up in the Lower Valley area during the period when the Rio Grande Project irrigation facilities were being constructed. Most of his career was spent at Tornillo Heading, Fabens, Tex., a major point for regulation of water through the Lower Valley irrigation system.

He learned to control the waterflow first by arithmetic but later by judgment based on experience. He also learned the technical side of operating and

maintaining an irrigation system. He knows the farmer's side of the coin and knows how his work ties in with other employees' jobs and the water users' problems.

In times of peak system loads or in bad weather, Mike has been known to spend hours of his own time patrolling potential problem areas, helping a water user complete a badly needed irrigation, helping other employees on their shifts, or making emergency repairs to protect crops and property. He has earned the respect of his coworkers and water users, who affectionately call him "Tio" (uncle).

For the past 25 years, Mike has kept weather data on the Fabens area for the Department of Commerce National Climatic Center in Asheville, N.C., and the National Weather Service in Fort Worth, Tex.

Mike and Ramona, his wife of 47 years, recently moved into a home in Ysleta, Tex. They had lived in project quarters at

---

Sue DeShazo is a public information specialist, Bureau of Reclamation, Southwest Region, Amarillo, Tex.

---

Esequiel  
(Mike) Macias



Tornillo Heading since he became a gatetender almost 30 years ago and still stay there occasionally during the irrigation season. In those quarters they raised 6 children, and now have 26 grandchildren and 2 great grandchildren. Most of Mike's leisure time is devoted to his family and church, but he enjoys going to baseball games and the movies when he has an opportunity. In winter months he takes extended trips to Philadelphia, Pa., San Antonio, Tex., and Phoenix, Ariz., to visit his children.

In 1976 Mike was recognized by the Federal Business Association of El Paso, Tex., with a special Bicentennial Award for his 54 years of service in the Federal Government. He shared a Unit Citation for Meritorious Service in 1952, received a Superior Performance Award in 1966 based on an outstanding performance rating, and again in 1971 was given a cash award for an outstanding performance rating. **EP**

---

## Water Quiz

---



1. The process of making water fit to drink requires removing impurities by filtration, precipitation, or chemical neutralization. What are some of the best materials used for filtering water?

2. Water containing many impurities conducts electricity better than pure water. True or False?

18

3. Many people believe limestone caves are a major source of ground water. Actually, pools or rivers in these cavernous formations represent only about \_\_\_\_\_ percent of the total ground water reserves of the earth.

a. 25 b. 17 c. 5 d. 1

4. The average U.S. city dweller uses about \_\_\_\_\_ gallons of water a day.

a. 20 b. 75 c. 150 d. 200

Answers on page 27



One of the many sewage treatment plants in Sacramento, Calif.



19



Four million gallons of liquid waste material are treated per day at the Arden Treatment Plant in Sacramento.

# WORLD CHAMPIONSHIP INNERTUBE RACE

by Julian Rhinehart

One day the Colorado River upstream of Yuma, Ariz., is a sleepy sweltering summer stream. The next day it is the scene of one of America's stranger phenomena—the "World Championship Innertube Race."

Each year people go to great lengths, some even driving hundreds of miles, to spend a portion of their Fourth of July weekend floating down an 8-mile stretch of desert river on an innertube or wildly designed raft. The weather is hot; the discomforts are many; there is no bundle of cash at the finish line; but each year the list of entrants grows.

What started out 11 years ago as a promotional stunt that Yuma motel owners dreamed up to increase off-season tourist business has now blossomed into a Fourth of July tradition in the southwestern United States. That first 1967 race was expected to attract just a few



---

Julian Rhinehart is a public information specialist, Bureau of Reclamation, Lower Colorado Region, Boulder City, Nev.

---

entrants, but over 75 people participated. The 1977 race registry included over 2,500 tubers, floaters, and fun seekers.

---

***What started out as a promotional stunt . . . blossomed into a Fourth of July tradition.***

---

In contrast to that first group of casual floaters, this year's race was divided into eight different classes of tubers. In addition to family and team groups of racers, six other classes were set up according to age, ranging from 14 years to the over-50 category.

In 1968 the Yuma County Chamber of Commerce took over the race management. Jim Bjornstad, Chamber President, recalls that "The novelty of setting up those first races was a challenge to us. We had read in the *Ford Times* about a western New York State corporation which had started a small innertube regatta for its employees, and the idea intrigued us.



**Tubers relax before the race.**

We wrote to the company for more details and started our own event with a few changes. To the best of my knowledge, Yuma had the first organized race on a competitive, public level."

To Bjornstad one of the most fascinating aspects of the races has been the motivation of the participants. Why do people in ever-increasing numbers endure 100°+ heat, sometimes lengthy travel, fatigue, sunburn, thirst, and hunger to be tubers?

For many it is the lure of the crowd or a one-time novelty experience. For others the annual event offers an unusual excuse for a weekend trip. But for countless Yumans the Fourth of July weekend innertube race has become a family tradition.

Whatever the attraction, the number of entrants increases every year.

The 1977 race list contained the names of over 2,500 people who paid the entry fee. Nine States were represented with over 1,000 tubers coming from 46 California communities between San Diego and San Francisco. Two students traveled to Yuma from Hawaii for the race. In 1975 a Honolulu dentist, who

came over specifically for the race, was the Grand Sweepstakes winner.

The 1971 race winner Gary Nelson, who was then a Brigham Young University student from Yuma, was additionally rewarded for his victory with appearances on "What's My Line" and "To Tell The Truth."

The enthusiasm of the participants is equalled by the zest of local volunteers putting the event on each year. Many of these Yumans have been involved in some phase of the World Championship Innertube Race since its inception. Key positions are usually filled by a different person each year. The race chairman one year would be the sergeant from the U.S. Army Recruiting Office and the next year the chairman would be the owner of a local construction company.

Although the Chamber of Commerce has been the sponsoring organization for the race,





More floats.

volunteer assistance streams from the local community. Each year communications, rescue, and medical support is furnished by the area's two military installations: Yuma Marine Corps Air Station, and the Yuma Proving Ground, which is a U.S. Army installation located north of the city. The Bureau of Reclamation, the Bureau of Land Management, and local law enforcement agencies provide their assistance. Local citizens' and service groups also make their talents available.

Bjornstad attributes the race's tremendous success to good planning and publicity. Each spring local news media announce the first of several organizational meetings to be held prior to race time. Chairmen are designated for the critical committees: starting line, finish line, concessions, and publicity. Committee members either volunteer or are volunteered.

The meetings are brief, systematically moving down the line of assignments. A well-tested check list, refined by a debriefing session following each year's race, provides a proven outline for the chairmen to follow.

A clever and well-organized publicity program for the race has expanded from an occasional article being published in a nearby newspaper to almost yearly coverage by national magazines and networks. The 1977 race was included in the national advertising program of a major soft drink bottler.

Not all of the skills are with the organizers. Dennis Quesenberry entered the first 1967 race as an 11-year old and has been a participant nearly every year since. He reports that the winners have developed certain skills. The tuber who is able to read the river currents has a better chance of winning.

As a three-time trophy winner, Dennis is well qualified to recommend racing techniques. He suggests floating on your back or sticking your feet through the tube and swimming on your stomach.

Even the floating requires a special knack. Every tube has a bulge and it's best to put that under your head. Then you can float on your back, keep an eye on the other racers, and use the bulge as a bow to help you cut through the water.

Although the race is set up in categories according to age, the older participants get their share of the action. Last year's winner was Chuck Husti, a 47-year old Californian who completed the 8-mile course in 3 hours and 1 minute. The 50 and older class trophy was carried off again last year by 67-year old Bill Volk of El Centro, Calif.

---


The World Championship Innertube Race has become a tradition among many Yuma families.



A more casual but equally interesting part of the race is the annual Floatdown Parade made up of floats which are sponsored and constructed by groups and organizations. They are divided into military or non-military classes. The judging is based not upon speed, but on originality, interest, and effort in construction. A tuber may register for \$2 (\$1 in advance), but floats require at least a \$10 entry fee.

24

The only real difficulty encountered through the years has been the recent problem of locating a liability insurance carrier. As the event grows and crowd control becomes more difficult, coverage is becoming increasingly hard to find.

If good times and common sense continue to prevail, however, Yumans and the Southwest can look forward to more splash from the World Championship Innertube Race. 



"Queen" Tonna Brathovde holds her tube aloft for all to see.



---

## Employees in the News

**Jansen Appointed  
Assistant Commissioner**



Robert B. Jansen of California was appointed Director of Design and Construction in October 1977. He was then reassigned to the position of Assistant Commissioner for Engineering and Research, headquartered at the Engineering and Research Center in Denver, on February 1, 1978.

Jansen had been Chief of Design and Construction for the California Department of Water Resources since June 1975.

In announcing the appointment, Commissioner Higginson said: "Bob Jansen has had nearly 30 years of varied experience as a professional engineer during which he has demonstrated the competence and leadership needed to manage Reclamation's

Division of Design and Construction."

Jansen's first position with Reclamation was as an engineering aide while an undergraduate at the University of Denver.

From 1949 to 1956 he worked for the California Department of Water Resources, the city of Los Angeles, a private engineering firm in Peru, and the Colorado River Board of California. In 1956 he returned to the California Department of Water Resources to work on the \$3 billion State Water Project. Much of this DWR experience has been in the field of dam safety.

In 1971 he was named Deputy Director of Water Resources for the State of California.

During the last 6 months of 1976 Jansen served as Executive Director of the Independent Panel to Review Cause of the Teton Dam Failure.

Jansen is a graduate of the University of Denver with a B.S. degree in civil engineering. He earned his M.S. degree in civil engineering from the University of Southern California.

---

---

---

## Crandall Retires

26



David L. Crandall, Regional Director of the Upper Colorado Region since 1965, retired on December 31, 1977. He had 35 years of Federal service.

After graduation from Stanford University in 1941 with a bachelor of science degree in civil engineering, Crandall began his career with the Bureau of Reclamation as a junior engineer in Sacramento.

He served in the U.S. Navy from 1942 to 1946, and then

returned to Reclamation as an engineer in the Regional Planning Office, Billings, Mont. From 1951 to 1953, he again served in the Navy, and returned to Reclamation, assigned to the Central Snake River District in Boise. In 1960 Crandall was promoted to the position of Area Engineer where he assumed full responsibility for the operation of the Snake River Development Office.

In January 1965, Crandall was assigned to the position of Project Superintendent, Minidoka Project Office. He served in that position until his reassignment to Regional Director, headquartered in Salt Lake City, in September 1965.

Crandall's long career with the Bureau of Reclamation has been highlighted by outstanding performance. In recognition of his ability, he was presented the Department of the Interior Distinguished Service Award in December 1976.

## Reclamation and BIA in Water Conservation Study

The Bureau of Reclamation and the Bureau of Indian Affairs are cooperating in studies to identify water conservation opportunities on Federal irrigation projects.

Team leader Larry Swarner, Chief, Maintenance Branch, Water Operations and Maintenance at the E&R Center, said the team was formed in accordance with a provision of the recently passed Drought Act, Public Law 95-18. Provisions of the act authorize the Secretary of the Interior to undertake an evaluation of the operational effectiveness of existing Federal irrigation projects.

Detailed studies will follow the initial evaluating and ranking of projects. According to Commissioner Higginson, the study will "identify deficiencies in facilities and operations which result in inefficient use of water and will provide estimates of benefits and costs, as well as the environmental and social constraints associated with upgrading existing facilities and management practices."

---



# a rocky mountain high

To experience the rugged beauty of Colorado's high country on a crisp spring day—some might call it euphoria. In Colorado, it's a "Rocky Mountain High."

E&R Center photographer Bob Pauline accompanied Carrol Hamon and Keith Mackey of the Soil Conservation Service on a March snow survey. They measured snowpack in the Loveland Pass area about 65 miles west of Denver where the elevation approaches 3,658 meters (12,000 feet). The season's snowpack and its water content were substantially above normal.

Pauline's impressions of the day were captured in these photographs.

28





UNITED STATES  
DEPARTMENT OF THE INTERIOR  
Bureau of Reclamation  
Washington, D.C. 20240

POSTAGE AND FEES PAID  
DEPARTMENT OF THE INTERIOR  
INT-420



RECLAMATION ERA SERIALS PROCESSING UNIT  
SERIALS PROCESSING UNIT  
MICROFILMS INTERNATIONAL  
300 N ZEEB RD  
ANN ARBOR MI 48106

**SUBSCRIPTION ORDER FORM**

ENTER MY SUBSCRIPTION TO *RECLAMATION ERA* for one year

@ \$ 4.00 Add \$ 1.00 for foreign mailing. No additional postage is required for mailing within the United States.

Send Subscription to:

NAME - FIRST, LAST																								
COMPANY NAME OR ADDITIONAL ADDRESS LINE																								
STREET ADDRESS																								
CITY										STATE					ZIP CODE									

PLEASE PRINT

- ☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)
- ☐ Charge to my Deposit Account  
No. \_\_\_\_\_

MAIL ORDER FORM TO:  
Superintendent of Documents,  
Government Printing Office,  
Washington, D.C. 20402

